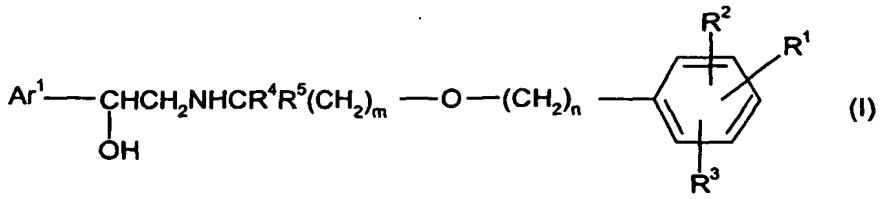
CLAIMS

1. A compound of formula (I)



(I)

or a salt, solvate, or physiologically functional derivative thereof, wherein:

m is an integer of from 2 to 8;
n is an integer of from 3 to 11, preferably from 3 to 7;
with the proviso that m + n is 5 to 19, preferably from 5 to 12;

R^1 is $-XNR^6C(O)NR^7R^8$; wherein

X is selected from $-(CH_2)_p-$ and C_{2-6}alkenylene;

R^6 and R^8 are independently selected from hydrogen, C_{1-6}alkyl and C_{3-7} cycloalkyl; wherein said C_{1-6}alkyl and C_{3-7} cycloalkyl moieties may optionally be substituted by $-CO_2H$ or $-CO_2(C_{1-4})$alkyl;

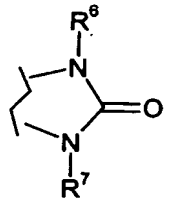
R^7 is selected from hydrogen, C_{1-6}alkyl, C_{3-7}cycloalkyl, $-C(O)R^9$, phenyl, naphthyl, hetaryl, and phenyl(C_{1-4}alkyl)- and R^7 is optionally substituted by 1 or 2 groups independently selected from halo, hydroxy, C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6} alkoxy, $-NHC(O)(C_{1-6}$alkyl), $-SO_2(C_{1-6}$alkyl), $-SO_2$(phenyl), $-CO_2H$, and $-CO_2(C_{1-4}$alkyl) and $CONR^{10}R^{11}$;

R^9 is selected from C_{1-6}alkyl, C_{3-7}cycloalkyl, $-CO_2H$, $CO_2(C_{1-4}$alkyl), phenyl, naphthyl, hetaryl, and phenyl(C_{1-4}alkyl)- and R^9 is optionally substituted by 1 or 2 groups independently selected from halo, C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6} alkoxy, $-NHC(O)(C_{1-6}$alkyl), $-SO_2(C_{1-6}$alkyl), $-SO_2$(phenyl), $-CO_2H$, and $-CO_2(C_{1-4}$alkyl);

R^{10} and R^{11} each independently represent hydrogen, C_{1-4}alkyl or C_{3-7} cycloalkyl, and

p is an integer from 0 to 6, preferably from 0 to 4;

or R^1 is cyclised such that R^8 forms a bond with the phenyl ring to which R^1 is attached, via the ring carbon atom adjacent to R^1, so as to form a moiety of the formula:



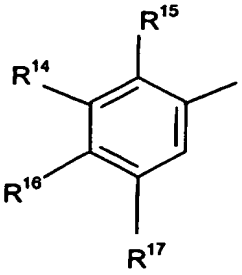
R^2 is selected from hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy, phenyl, halo, and C_{1-6}haloalkyl;

R^3 is selected from hydrogen, hydroxy, C_{1-6}alkyl, halo, C_{1-6}alkoxy, phenyl, C_{1-6}haloalkyl, and $-SO_2NR^{12}R^{13}$;

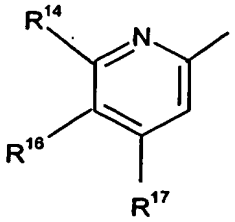
wherein R^{12} and R^{13} are independently selected from hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, phenyl, and phenyl (C_{1-4}alkyl), or R^{12} and R^{13} , together with the nitrogen to which they are bonded, form a 5-, 6-, or 7- membered nitrogen containing ring;
and R^{12} and R^{13} are each optionally substituted by one or two groups selected from halo, C_{1-6}alkyl, and C_{1-6}haloalkyl;

R^4 and R^5 are independently selected from hydrogen and C_{1-4}alkyl with the proviso that the total number of carbon atoms in R^4 and R^5 is not more than 4;

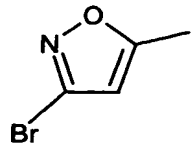
and Ar^1 is a group selected from



(a)

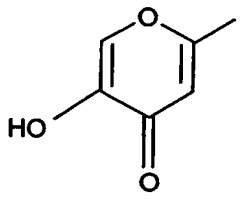


(b)



(c)

and



(d)

wherein R^{14} represents hydrogen, halogen, $-(CH_2)_qOR^{18}$, $-NR^{18}C(O)R^{19}$, $-NR^{18}SO_2R^{19}$, $-SO_2NR^{18}R^{19}$, $-NR^{18}R^{19}$, $-OC(O)R^{20}$ or $OC(O)NR^{18}R^{19}$,
and R^{15} represents hydrogen, halogen or C_{1-4} alkyl;

or R^{14} represents $-NHR^{21}$ and R^{15} and $-NHR^{21}$ together form a 5- or 6- membered heterocyclic ring;

R^{16} represents hydrogen, halogen, $-OR^{18}$ or $-NR^{18}R^{19}$;

R^{17} represents hydrogen, halogen, haloC_{1-4} alkyl, $-OR^{18}$, $-NR^{18}R^{19}$, $-OC(O)R^{20}$ or $OC(O)NR^{18}R^{19}$;

R^{18} and R^{19} each independently represents hydrogen or C_{1-4} alkyl, or in the groups

$-NR^{18}R^{19}$, $-SO_2NR^{18}R^{19}$ and $-OC(O)NR^{18}R^{19}$, R^{18} and R^{19} independently represent hydrogen or C_{1-4} alkyl or together with the nitrogen atom to which they are attached form a 5-, 6- or 7- membered nitrogen-containing ring,

R^{20} represents an aryl (eg phenyl or naphthyl) group which may be unsubstituted or substituted by one or more substituents selected from halogen, C_{1-4} alkyl, hydroxy, C_{1-4} alkoxy or halo C_{1-4} alkyl; and

q is zero or an integer from 1 to 4;

provided that in the group (a) when R^{14} represents $-(CH_2)_qOR^{18}$ and q is 1, R^{16} is not OH.

2. A compound of formula (I) as defined in claim 1 wherein R^6 and R^8 are independently selected from hydrogen, C_{1-6}alkyl and C_{3-7} cycloalkyl;
R^7 is selected from hydrogen, C_{1-6}alkyl, C_{3-7}cycloalkyl, $-C(O)R^9$, phenyl, naphthyl, hetaryl, and phenyl(C_{1-4}alkyl)- and R^7 is optionally substituted by 1 or 2 groups independently selected from halo, hydroxy, C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6} alkoxy, $-NHC(O)(C_{1-6}$alkyl), $-SO_2(C_{1-6}$alkyl), $-SO_2$(phenyl), $-CO_2H$, and $-CO_2(C_{1-4}$alkyl);
R^{14} is as defined above except that R^{14} does not represent hydrogen; and
all other substituents are as defined for formula (I).

or a salt, solvate or physiologically functional derivative thereof.

3. A compound according to claim 1 or claim 2 wherein R^{14} represents hydrogen, halogen, $-NR^{18}C(O)R^{19}$, $-NR^{18}SO_2R^{19}$, $-SO_2NR^{18}R^{19}$, $-NR^{18}R^{19}$, $-OC(O)R^{20}$ or $OC(O)NR^{18}R^{19}$; and R^{16} represents hydrogen, halogen, $-OR^{18}$ or $-NR^{18}R^{19}$.

4. A compound according to claim 1 or claim 2 wherein R^{14} represents hydrogen, halogen, $-(CH_2)_qOR^{18}$, $-NR^{18}C(O)R^{19}$, $-NR^{18}SO_2R^{19}$, $-SO_2NR^{18}R^{19}$, $-NR^{18}R^{19}$, $-OC(O)R^{20}$ or $OC(O)NR^{18}R^{19}$; and R^{16} represents hydrogen, halogen, or $-NR^{18}R^{19}$.

5. A compound of formula (I) according to any of claims 1 to 4 wherein R^1 represents $-(CH_2)_pNHC(O)NHR^7$.

6. A compound according to any of claims 1 to 5 wherein p is 0, 1 or 2.

7. A compound of formula (I) which is selected from:
N-[3-(4-{[6-({(2*R*)-2-[3-(Formylamino)-4-hydroxyphenyl]-2-hydroxyethyl}amino)hexyl]oxy}butyl)phenyl]urea;
N-[3-(4-{[6-({(2*R*)-2-[3-(Formylamino)-4-hydroxyphenyl]-2-hydroxyethyl}amino)hexyl]oxy}butyl)phenyl]-*N'*-phenylurea;
N-[3-(4-{[6-({(2*R*)-2-[3-(Formylamino)-4-hydroxyphenyl]-2-hydroxyethyl}amino)hexyl]oxy}butyl)phenyl]-*N'*-pyridin-3-ylurea;
N-[3-(4-{[6-({2-hydroxy-2-[5-hydroxy-6-(hydroxymethyl)pyridin-2-yl]ethyl}amino)hexyl]oxy}butyl)-5-methylphenyl]urea.

and salts, solvates, and physiologically functional derivatives thereof.

8. A method for the prophylaxis or treatment of a clinical condition in a mammal, such as a human, for which a selective β_2-adrenoreceptor agonist is indicated, which comprises administration of a therapeutically effective amount of a compound of formula (I), (Ia) or (Ib) according to any of claims 1 to 7, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof.

9. A compound of formula (I) according to any of claims 1 to 7 or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof for use in medical therapy.

10. A pharmaceutical formulation comprising a compound of formula (I) according to any of claims 1 to 7 or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof, and a pharmaceutically acceptable carrier or excipient, and optionally one or more other therapeutic ingredients.

11. A combination comprising a compound of formula (I) according to any of claims 1 to 7 or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof, and one or more other therapeutic ingredients.

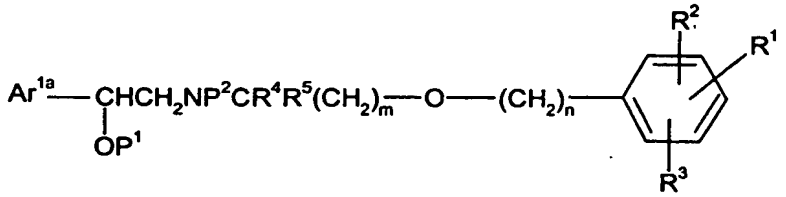
12. A combination according to claim 11 wherein the other therapeutic ingredient is a corticosteroid, an anticholinergic or a PDE4 inhibitor.

13. The use of a compound of formula (I) according to any of claims 1 to 7, or a pharmaceutically acceptable salt, solvate, or physiologically functional derivative thereof

in the manufacture of a medicament for the prophylaxis or treatment of a clinical condition for which a selective β_2-adrenoreceptor agonist is indicated.

14. A process for the preparation of a compound of formula (I) according to any of claims 1 to 7, or a salt, solvate, or physiologically functional derivative thereof, which comprises:

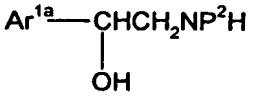
(a) deprotection of a protected intermediate, for example of formula (II):



(II)

or a salt or solvate thereof, wherein R^1, R^2, R^3, R^4, R^5, m, and n are as defined for the compound of formula (I), Ar^{1a} represents an optionally protected form of Ar^1; and P^1 and P^2 are each independently either hydrogen or a protecting group, provided that the compound of formula (II) contains at least one protecting group.

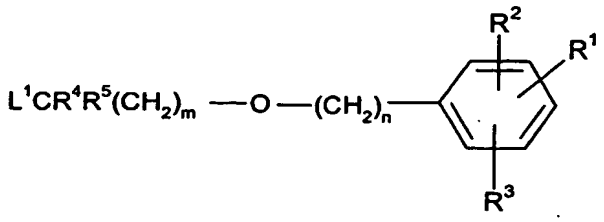
(b) alkylation of an amine of formula (IX)



(IX)

wherein Ar^{1a} is an optionally protected form of Ar^1 and P^2 is either hydrogen or a protecting group,

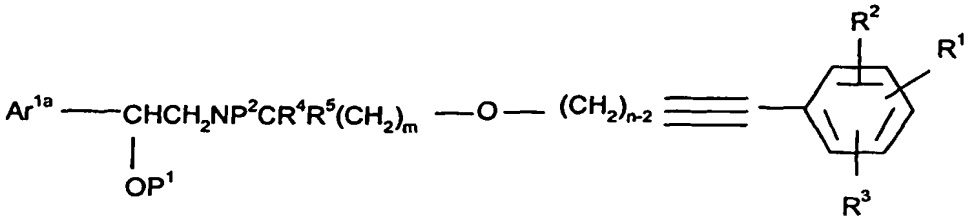
with a compound of formula (X):



(X)

wherein R^1, R^2, R^3, R^4, R^5, m, and n are as defined for the compound of formula (I) or (Ia) and L^1 is a leaving group;

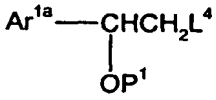
(c) reduction of a compound of formula (XII):



(XII)

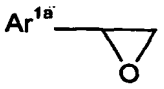
wherein R^1, R^2, R^3, R^4, R^5, m and n are as defined for formula (I), Ar^{1a} is an optionally protected form of Ar^1, and P^1 and P^2 are each independently hydrogen or a protecting group as defined above;

(d) reacting a compound of formula (XVI):



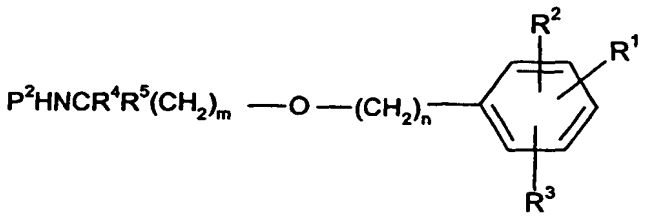
(XVI)

wherein Ar^{1a} is an optionally protected form of Ar^1, and P^1 is hydrogen or a protecting group.and L^4 is a leaving group as defined above for groups L-L^3 or a compound of formula (XVII):



(XVII)

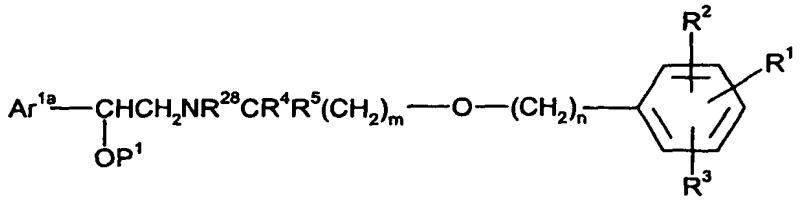
wherein Ar^{1a} is as hereinbefore defined with an amine of formula (XVIII):



(XVIII)

wherein R^1, R^2, R^3, R^4, R^5, P^2, m and n are as defined for formula (II); or

(e) removal of a chiral auxiliary from a compound of formula (IIa):



(IIa)

wherein R^1 – R^5, m and n are as defined for formula (I), Ar^{1a} and P^1 are as defined for formula (II) each independently represent hydrogen or a protecting group and R^{28} represents a chiral auxiliary.

followed by the following steps in any order:

(i) optional removal of any protecting groups;

(ii) optional separation of an enantiomer from a mixture of enantiomers;

(iii) optional conversion of the product to a corresponding salt, solvate, or physiologically functional derivative thereof.